

## VERTICAL ELECTRICAL DOWNTILT ANTENNA

### ABSTRACT OF THE DISCLOSURE

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A dual-polarization wireless base station antenna that implements vertical electrical downtilt and sidelobe reduction using beam steering circuit that includes a variable power divider and a multi-beam beam forming network. The variable power divider includes a single adjustable control element to divide an input voltage signal  
10 into a pair of complimentary amplitude voltage drive signals that exhibit matched phase and constant phase delay through the variable power divider. The beam forming network is configured as a double-sided, edge-connected microstrip module mounted to a main panel, which support the antenna elements in a vertical column organized into sub-arrays in a manner that implements sidelobe reduction. The  
15 power distribution network connecting the beam steering network to the antenna elements implements beam tilt bias and sidelobe reduction through coordinated phase shifting implemented through transmission media trace length adjustment.